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AUTHOR Wood, Richard J.
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ABSTRACT

This article describes and evalutes the IBM System 7 automated circulation system in use at Slippery Rock State College Library since 1973. Background information is furnished on the library and its locale as well as the general rationale and objectives for automated circulation systems. The presentation of the IBM S/7 includes (1) reasons for its selection; (2) transaction descriptions of charge, discharge, reserve, manual operations, and override; (3) descriptions of reports and lists such as daily circulation, overdue, fines, statistical summaries, and special printouts; (4) descriptions of hardware and software; (5) historical developments; (6) evaluation of the system and its components; (7) enumeration of system problems; (8) considerations for future development; and (9) costs. This seven-year review serves to summarize a stage in automated library systems. Appendices provide details of operating features, statistical data, reports, and sample forms. (Author/RAA)

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The IBM System 7

On-line Circulation System

at

Slippery Rock State College

By

Dr. Richard J. Wood

Head, Circulation Department

Slippery Rock State College Library

Slippery Rock, PA 16057

May, 1980

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ABSTRACT

This article describes and evaluates the IBM System 7 automated circulation system used at the Slippery Rock State College Library since 1973. More specifically, the topics covered include the following: (1) Reasons for and objectives of automating circulation; (2) Reasons for selecting this system; (3) Description of all transactions, including charge, discharge, reserve, manual charge, manual discharge, and override; (4) Description of all reports and lists, including daily circulation, overdue, fine, statistical summaries, and special print-outs; (5) Description of hardware and software; (6) History of development; (7) Evaluation of System hardware, software, procedures, etc; (8) Enumeration of problems and considerations for future development; and (9) Costs. It is hoped that this seven year review of the IBM S/7 serves as an adequate summary and description of an important stage in the history of automated library systems.

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I. BACKGROUND

A. Introduction

The following description of the International Business Machines (IBM) System 7 (S/7) automated circulation system is provided to aid those who are looking for either general information about computerized circulation systems or specific information about the S/7 Circulation System. Particular emphasis is given to describing the procedures for charging, discharging, reserving, listing and statistical reporting of library material at Slippery Rock State College. Explanations of why particular decisions were made are also offered. Finally, this article serves as an historical review of this automated circulation system at Slippery Rock State College. Because many other libraries used the S/7, it is important to preserve a record of this system for future library historians.

B. Setting

Slippery Rock State College (SRSC) is located in rural western Pennsylvania. Slippery Rock is a small college town about fifty miles north of Pittsburgh. It is a liberal arts institution with a good reputation for its physical education training. From its humble beginning as a normal school in 1889, SRSC now offers undergraduate curricula in nearly thirty major fields in the traditional five schools: Education; Humanities and Fine Arts; Natural Sciences and Mathematics; Social and Behavioral Sciences; and Health, Physical Education, and Recreation. A Master of Education degree is offered for Elementary Education, English, Guidance Counseling, Health and Physical Education, Physical Science, Social Studies, Biology, Reading, Special Education, Recreation, Environmental Education, and Early Childhood Education. In addition, a

Master of Science degree is offered in two subjects and a Master of Arts in two. Instruction is provided by a faculty of almost 350 members. There is a nearly equal number of support (staff) personnel. The Library serves each of these clienteles plus area residents totaling one thousand persons.

The Library itself is a modern (1972) facility which also houses a complete media and graphics department and offices and classrooms for the Library Science Department. Twelve professional librarians and ten support personnel help to provide service during the almost ninety hours of operation during the regular academic terms. Nearly thirty of the about one hundred fifty student assistants employed by the Library work in the Circulation Department as desk assistants, shelf readers, security guards, and shelvers. Most students work only 10 to 14 hours per week. Students at a separate circulation desk in the Instructional Materials Center perform the same activities for non-book (A-V) circulating material, as well as the juvenile and young adult, textbook, and curriculum material collections. Virtually all charging and discharging of library circulating material is done by these student assistants at both desks. All of these materials circulate through the S/7. About 150,000 books or units of audio-visual material circulate annually in the Library's collection of about 350,000 circulating books and 100,000 units of audio-visual material. Materials placed on closed reserve by faculty members are also maintained at both circulation desks; these reserves circulate manually. Non-circulating material elsewhere in the Library includes sizeable collections of reference books, periodicals, micro-reproductions, and government documents.

The college's computer center uses an IBM System 370/145 for all purpose academic and business-administrative uses. (In addition to performing these

campus functions, additional services for off-campus users are also provided on a contractual arrangement.) Academic services to campus users include computer-assisted learning, interactive and remote (batch) services, facilities for the computer science curriculum, and research capabilities for individual faculty and student members. A special academic service, offered through the Student Affairs Division, provides career information to students and, in addition, provides assistance to students desiring to improve writing and reading skills. Administrative uses are provided for offices such as student accounts, payroll, student records, admissions, academic affairs, administrative affairs, student affairs, registrar, financial aid, and housing. Test scoring and grade reporting facilities are available to all faculty members. Countless special, individually initiated programs are developed upon request.

C. Reasons for Automating Circulation

Prior to the introduction of the S/7 in November of 1973, the circulation system manufactured by Gaylord was used (Model C Book Charger). This system continued to be used for two years while the S/7 was being slowly phased-in.

Until circulation figures began approaching 100,000 items per year, the Gaylord system worked satisfactorily. More and more problems were encountered as enrollment rose, circulation increased, and library staff size was threatened by retrenchment. Student assistants had to be increasingly relied upon for filing, searching, typing, and operating the desk. The services offered through the developing Computer Center on campus were growing at a steady rate since the late 1960's. Members of the administration and faculty were demanding automation of services where efficiency could easily be increased,

services improved, and personnel reduced. From the library's viewpoint, automation of circulation procedures could have increased services, made a reduction in staff feasible, and/or eliminated the problems existing with the Gaylord system such as the following:

1. An inordinate amount of time was needed to sort, count, record, and file each day's book cards. These routines involved three staff members as long as three hours each day during heavy circulation periods.

2. Increasing difficulties in searching through the many circulation files to determine the whereabouts of books were experienced. Reserve requests (holds) were frequently not offered, except for faculty, because of time constraints.

3. There were an increasing number of "snags", or books for which no cards could be found. Our policy was to have these books sit on a snag shelf until after the end of the semester when time could be devoted to searching for the correct cards after the files were rectified.

4. An increasing amount of time was needed to produce overdue notices. First, patrons' Social Security numbers had to be looked up in computer directories and the names and addresses of the patrons written on the book cards and envelopes. Second, writing notices and addressing envelopes for delinquent borrowers took as long as three days, once a month, for several student assistants and clerical staff members. Faculty, who had a semester loan privilege, frequently did not receive notices even on a semester basis because of lack of time and staff.

5. An apparent lackadaisical attitude developed on the part of students and faculty about returning books and paying fines. Desk attendants did

not always observe the due dates on library material being returned and failed to figure fines. Fine notices were not always sent for small amounts of money. Because students learned that they could sometimes escape fines, the number of overdue items increased from year to year.

6. Renewals could not be handled during busy times. This service was posted as not available although renewals were given when a special request was made.

7. The failure-rate in identifying the Social Security numbers stamped by the Gaylord book charger increased. About 1% of the circulation was not clearly identifiable; one-tenth of these became overdue and were never returned each year. Thus, over one hundred items each year eventually became missing due to inability to identify the patron.

8. Since students with overdue and fine obligations first had to be accurately identified and sent notices, it became increasingly difficult and time-consuming to have the grades of students withheld through the Registrar's Office before the end of each semester.

D. Objectives

The objectives of the planned switch to an automated system were the following: (1) to reduce or eliminate the problems mentioned above, (2) to increase efficiency, (3) to provide new services and reports, and (4) to reduce the effect of staff retrenchment. Cost-justification for the large expenditure of money on computer hardware and software as well as switch-over costs in keypunching, re-pocketing and typing, and shelving were based on these four primary factors. More specifically, implementation of the IBM S/7 has resulted in the following advantages:

1. Card files of circulation have been eliminated, except for books charged when the terminal is off-line. Material charged to all patrons and special locations such as exhibit, bindery, lost, etc., are listed by call number on a daily, cumulative basis.

2. Overdue and fine notices are printed automatically and need only to be stuffed into windowed envelopes by student assistants in the Circulation Department.

3. Fines are automatically calculated by the computer on a nightly (batch) basis and the fines list updated. An overdue and fines list by patron name are printed on a daily, cumulative basis.

4. Renewals are easily accomplished by discharging books with the IBM cards through the terminal and, then, re-charging the item to the patron. (It is necessary to discharge items first to find out if there is a hold placed against them.)

5. Holds (reserve requests) are easily placed on items listed in the daily circulation print-out through a transaction key which results in the computer record being flagged. Guidance lights indicate books which have been reserved (held) upon discharge.

6. In addition to the above mentioned statistics (p.45) which record the number of circulated items by classification letter, the following additional statistical reports are now offered by the S/7:

   a. Circulation by majors (students) and departments (faculty) including numbers, percentages, and averages of circulation. These figures are arranged by schools.

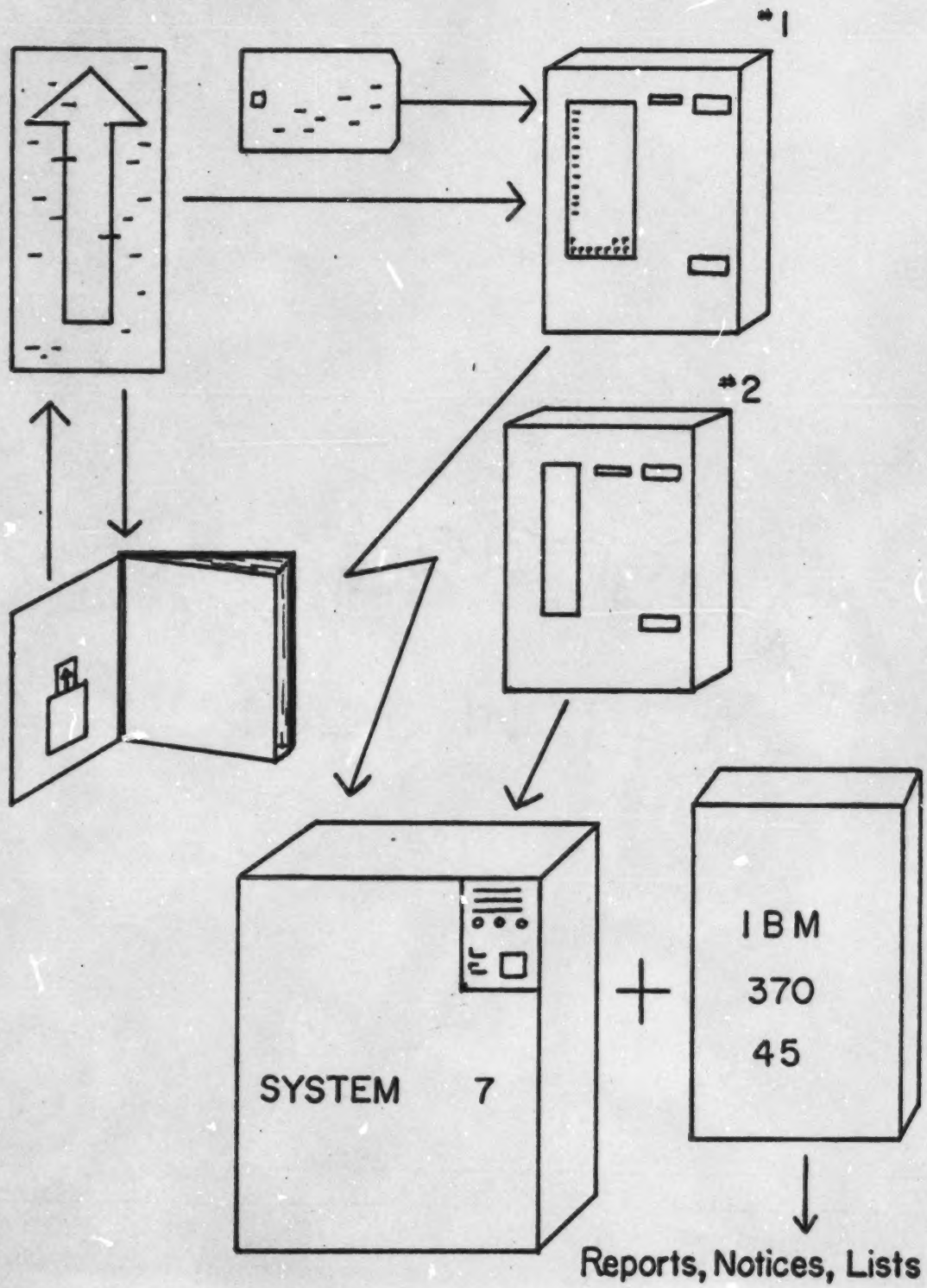
   b. Frequency listings of each circulated item by call number. Need for added copies can be determined easily by checking books which have circulated more than x amount of times in y years. Weeding is facilitated, on the other hand, because books which have not circulated are not listed, or listed infrequently.

   c. Number of transactions (charges) per 15 minute periods.

   d. List of items charged to special types of patrons, Social Security numbers, or categories of circulation such as books on exhibit, or at bindery.

   e. Number of overdue books and number of fine obligations by type of patron (faculty, staff, freshman, sophomores, etc.) A list of all reports prepared by the system can be found in Appendix B.

7. Two clerical, full-time positions have been eliminated in the Circulation Department.


#1
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IBM
370
45
SYSTEM 7
Reports, Notices, Lists

II. THE IBM SYSTEM 7

A. Introduction

The S/7 is a mini-computer designed initially by IBM for production and sensor-based needs in industry and business. The circulation system uses only a portion of the S/7's capability. It could conceivably be used for other campus services such as temperature control, permit parking, smoke detection, ID verification, bookstore applications, etc. Although these possibilities had been investigated, plans were never developed for such uses since further purchases of hardware and software would have been necessary. The need to purchase and install coaxial cable between the Computer Center and each service point was perhaps the biggest roadblock to such developments. One or more S/7's can be tied into IBM systems such as the 360, 370, 1130, and 1800 models. In such multisystem configurations, the main system usually performs file updating, batch inputs, notice and report listings. This open-ended design and modularity can be an important advantage over a competitor's system. The expense of the S/7 was higher than other competitors, however, for the same reasons.

At SRSC, the S/7 is linked to the Computer Center's IBM 370 Model 145 using DOS/VS operating system. The S/7 is located at the Computer Center itself. Two IBM 2791 badge/card readers, located at the main and Instructional Materials Center circulation desks, are linked by purchased cable (RG/130) to the S/7. The S/7 has 12K of memory. Both the readers and the memory have been purchased. The 370/145 host processor analyzes and stores the data from the S/7, produces updated files, and processes lists, reports, and notices for circulation.

The library does not need to compete for the services of the 370 with other departments and service points on and off of campus. Even when the host is down, the Library is still on-line to the S/7 unless the entire computer or electrical system is malfunctioning or under repair. Rarely has the S/7 been down. During the library operating hours, all transactions are recorded on the disc file of the S/7. Loading the control program is necessary for bringing up the S/7 each morning. This is a simple matter for the Computer Center operator. A couple of buttons are hit on the S/7 itself and the operator types in the time and several short instructions on the 5028 operator station. Holds and checking patron Social Security numbers against the delinquent or restricted list of borrowers is also handled by the S/7 on an on-line basis.

The S/7 disc memory is used to store the following information on-line during regular operation: (a) an indicator for each accession number (used to determine if a given item has been charged), (b) a transaction file which contains a record for each transaction and is transmitted to the IBM 370 each night, (c) a delinquent patron file (used to compare against the patron's Social Security number). All reports are produced from the IBM 370 files after the data from the S/7 disc is transmitted. Tape files are used to store history information and transaction data. A vault is used to protect the history file and give the capability to at least rebuild the majority of the listings in case of disaster.

Changes in any of the programs require a work order request to be sent to the Computer Center for approval by the Director of the Computer Center. Unless urgency demands it, the program change is treated as any other request from another academic department or service point. IBM 370 program changes are

made by Computer Center programmers. COBOL is the language used in all IBM 370 programs. But Assembler is the language S/7 programs are written in; Assembler is a difficult language and these programs were written by IBM programmers on a contractual basis. At this time, there is no more memory in the S/7 for additional S/7 programs.

B. Reasons for Selecting the IBM S/7

The IBM S/7 was selected over competitors not only because the above-mentioned objectives could be met by IBM, but because service had been consistently excellent over many years. For years the Computer Center has dealt with IBM and found its hardware, software, and services superior to other vendor's. Service, for instance, has come from one of the nearby towns of Butler, Youngstown (Ohio), or Pittsburgh. The campus Computer Center has been virtually assured of twenty-four hour service and usually receives service on the same day as a malfunction. The fact that relatively little down time has occurred has been added incentive for staying with IBM equipment.

Other vendors were investigated between 1969 and 1971. Drawbacks in terms of service, compatibility with existing IBM equipment, lack of flexibility, and so forth were seen in competitor's systems. Other systems were a great deal less expensive, but costs were a secondary consideration to compatibility of hardware, flexibility, and service (maintenance) on equipment.

The S/7 offered one feature which was considered important at the time. This was the ability to automatically compare patrons' Social Security numbers against a list of restricted (delinquent) borrowers. At present, the S/7 disc memory allows fifty patrons to be restricted.

One of the overriding advantages of the IBM S/7 over some competitors

is its virtually foolproof operation. Desk attendants are instructed by guidance lights at each step in the process. When a mistake is made, an error condition message is lit to indicate the mistake and the 2791 badge/card terminal "freezes". If the guidance light instructs the attendant to insert the badge but the card is inserted instead, for example, the IBM book card will lock in the terminal until the release key is hit to free it. The same is true if the badge is inserted instead of the card. A "Badge not Readable" light shows if a mutilated badge is not able to be read. Other error conditions are listed in Appendix B.

When an accession number or Social Security number needs to be manually entered, mistakes are kept to a minimum because each number hit is displayed on a digital display. Attendants must verify this information before entering it to the S/7.

C. History of the S/7 at SRSC

Consideration of automating circulation procedures began as early as 1966 but the state of the art was such before and into the 1970's that serious consideration was not given to computer systems that also took automation of acquisitions, serials, and cataloging into account. After several months of careful study and investigation of several circulation systems, the decision to go with the IBM S/7 came in late 1971.

Various methods were employed to keypunch new and retrospective library material. Until September of 1974 only bookcards were keypunched. Keypunching began in October of 1972 when three keypunch operators from the Computer Center were "borrowed" until March of 1973. A second keypunch machine was loaned to us during this time and remained in the library until

January of 1975. In March of 1973, one of the three keypunchers on loan to us from the Computer Center became a permanent keypunch operator for the Library. The other two operators were replaced by six students who worked mostly during the evenings and weekends for a period of about one year. A temporary, full-time civil service keypunch operator was hired from March, 1974 to December, 1974. These two operators worked during the day and the students were switched to evening and weekend hours for this period. After December, 1974, only the one, full-time, civil service keypunch operator was employed for IBM card processing. Each full-time operator keypunched over 2,000 books per month each. When students were also used, as many as 16,000 books per month could be processed. The current keypunch operator now keypunches cards only for new acquisitions, books which were missed, damaged cards, fine paid cards, and special projects. On the average, from one to three hours a day are now spent in doing this.

The procedures used in keypunching books were to make IBM cards for all new book acquisitions and books returned from circulation immediately. At the direction of the head keypunch operator, the circulation department librarian or clerk instructed students to pull so many cart-fulls of books from the collection. (Books were opened to the pocket and only books without IBM cards were pulled.) These were then taken to the keypunch area in the cataloging/processing department. Books from high use areas were pulled first.

The Head of Technical Services had decided that books must be keypunched with the book-in-hand for verification of the spine label and book pocket information (author, title, call number, and accession number). An alternative favored by the author was to keypunch from the shelf list. This

alternative would have been faster for the keypunch operators. Mistakes still could have been caught when the cards were put in the books. And the advantage of a thorough inventory of the collection would have been experienced. This method was employed for audio-visual material.

Audio-visual materials, which circulate from a separate desk and closed stack area, were not processed with key punched cards until September of 1974. By this time, the vast majority of circulating books were key punched. Cards for the nearly 100,000 units of audio-visual materials were key punched in two months from the shelf-list cards. There were two reasons for key-punching from the shelf list for audio-visual materials. One, titles were nearly impossible to determine from the item in hand. Second, there were thousands of slides and other materials, such as games and kits, with multiple pieces in one container. Handling such bulky or unwieldy material was not feasible. In addition, the keypunching of audio-visual material was done in a fraction of the time it took to do books by the method described above (p.). Beginning November, 1974, audio-visual materials were circulated by the S/7.

D. Description of S/7 Components

The two principal components of the S/7 in terms of hardware, are the S/7 mini-computer itself and the badge/card readers. These are described below.

1. The System 7:

   + Serves as system controller.
   + Designed for full-time operation and long-life.
   + Simple installation and serviceability; swing-out gates for quick access.
   + Fast internal speeds; execution of instructions and input/output by a nanosecond monolithic memory. Interrupt response

time of between 800 nanoseconds and 3.1 microseconds. Average response time of 1.4 microseconds.

+ Modularity for expansion or new application requirements.

+ It is the processor and input/output module to provide the computing power and control functions for the operator station, input/output module and host communication.

+ Eight memory sizes from 2K to 16K words can be selected.

+ Auxiliary storage is provided through various models of the disc storage module. Each is capable of storing 1.228 million words of information.

+ Provides for communication with the operator via an IBM Operator Station with keyboard, typewriter-like printer, and paper tape reader/punch.

+ Program can be prepared and loaded directly from the host processor.

+ Provides for three access methods under OS: BTAM, or Basic Telecommunications Access Method; QTAM, or Queued Telecommunications Access Method; or TCAM, or Telecommunication Access Method. (BTAM and QTAM are available under DOS).

2. 2791 badge/card readers:

+ Provide the communication or transmission of IBM card and badge information to the S/7.

+ Allow for the attachment of a low speed printer such as an IBM 1053.

+ Can work interconnectedly with a total of 16 readers by means of a high speed controller.

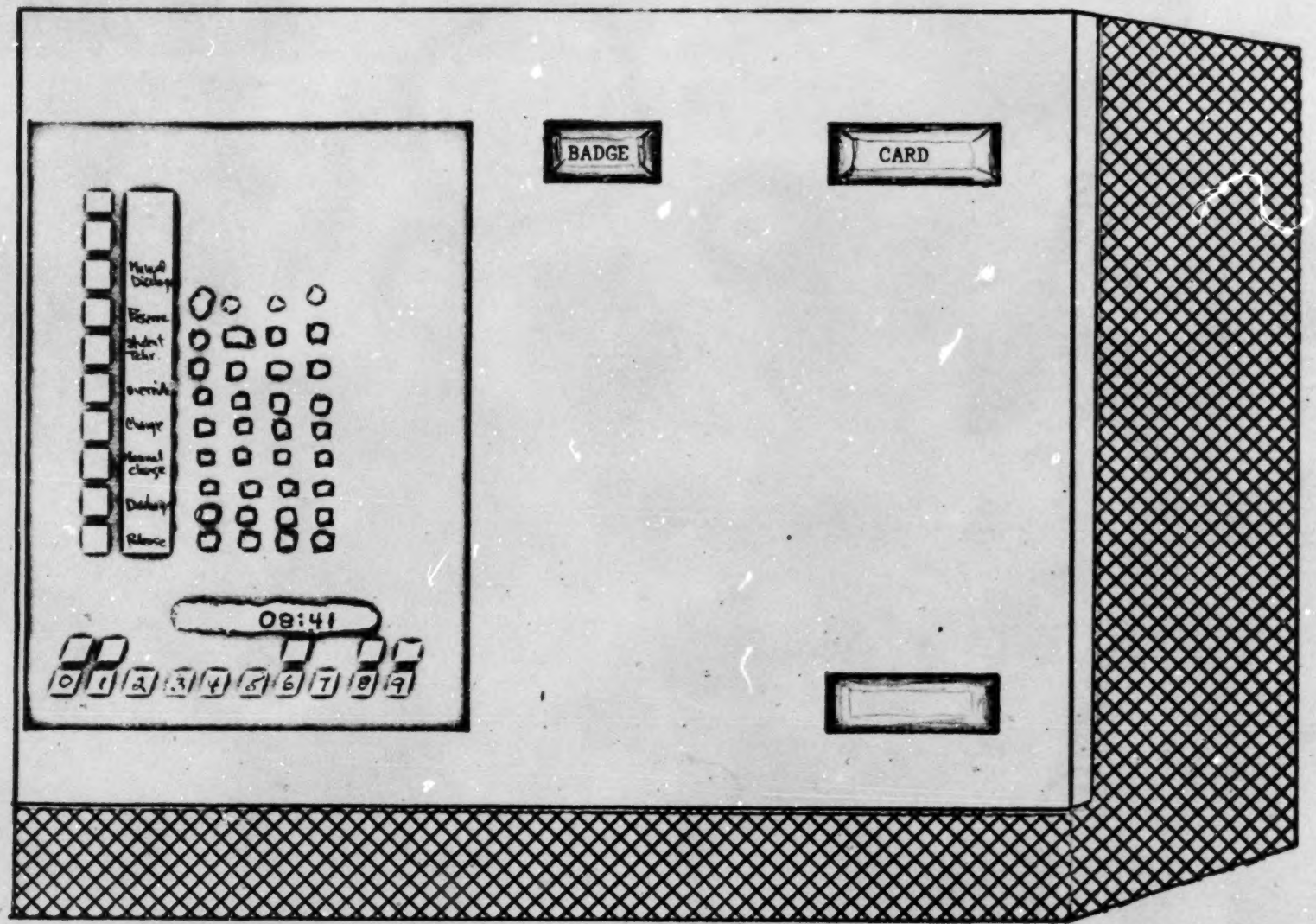
+ Have a matrix of guidance lights which instruct operators on each step of a transaction and indicate errors.

+ Have a set of 10 numeric keys (0-9) for manual entry and transmission of numeric data. These numbers are instantly displayed for verification before transmission to the S/7.

+ Read 80-column cards.

+ Read IBM 357/1037 type of identification badges.

+ Provide two special symbol keys, one entry key, a release key,



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The IBM 2791 Badge/Card Reader

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clear key, next guide key, and nine transaction keys.

+ Allows the attendant to cancel an uncompleted transaction which is in error by means of a clear key.

+ Quickly provide multiple charges to the same patron with a badge and somewhat longer time for multiple charges done manually.

+ Provide visual, digital displays of the time. Transactions are recorded with the exact time to eliminate problems with items which receive more than one charge and discharge per day.

+ Allow up to thirty-two 2795/2796/2797 to be attached to a 2791 terminal.

E. Transactions: Description and Operational Instructions

Charge transactions are performed using the appropriate student, faculty, staff, or non-college patron badge and the IBM book card. Badges must be of the thickness, length, and width tolerances specified by IBM. Badges are inserted in the terminal slot marked BADGE (see p.15). A badge is inserted face up, with the large square hole entering first. This hole is punched in every badge to properly register the badge in the reader device until it has been read. A solid clicking sound is heard when the badge is accepted.

Badge-charge, manual-charge, and discharge transactions require an IBM book card. A card is inserted in the slot at the top of the terminal marked CARD (see p.15). The card reader device "grabs" the card after it is properly inserted and returns the card through a similar slot at the bottom of the reader. Cards are ordered with a large printed arrow (see p.7) for easy recognition by terminal operators. The card is inserted face up with the arrow entering first. Guidance lights, or messages, are provided (see Appendix A) to indicate error messages and instructions.

1. The Charge Transaction With a Badge

The operator presses the CHARGE key. The system should respond with "Enter Badge" message if the badge is properly punched and readable. The badge is then inserted, resulting in the "Enter Card" message. If the card is properly punched and readable, the "Enter Badge" light will be lit and the process may be repeated. The location of these transaction keys and messages may be seen in Appendix A.

Several messages occur if the badge or card is not properly made. These are "Badge Not Readable", "Restricted Patron", and "Transaction Not Processed". The manual charge transaction is used when the "Badge Not Readable" message occurs. The "Transaction Not Processed" light usually indicates a system failure. When this situation occurs the transaction should be repeated, or the Computer Center operator informed. The "Restricted Patron" light indicates a delinquent patron. A restricted patron is informed by the desk attendant of his overdue and fine obligations at this point. A supervisory key, however, is required in order to allow a restricted patron to borrow material.

2. The Manual Charge

The manual charge is used to charge out a book without a badge or used when a badge is damaged or mutilated. The manual charge key is pressed, causing the message "Enter Patron 1-5" to appear. This instructs the operator to key-in the first five digits of the patron's Social Security number on the keyboard. The last four digits of the Social Security number are similarly entered by hitting the Enter key after inputting each set of numbers. To repeat the transaction for another item to the same patron, the operator needs to hit a zero and the Enter key two times (zero-enter, zero-enter).

The "Restrict Patron" and "Transaction Not Processed" messages can occur with this transaction also. If the incorrect amount of digits are entered, a "Patron Not Entered" or "Invalid" message will appear.

3. The Discharge Transaction

This is the easiest transaction because a badge is not required. The operator merely inserts the IBM card into the terminal after hitting the DISCHARGE transaction key one time. An "Enter Card" message appears after each time a card is inserted. The operator may continue discharging books in this manner until a charge or other transaction occurs.

Since only one terminal operates at each circulation desk, discharges tend to be done at slower times. If circulation were warranted, a second terminal could be purchased for discharging as well as a spare terminal in case a primary one broke down.

Error messages which may result include "Bad Card" and "Keypunch New Card". The former indicates an improperly punched card and the latter a damaged or obsolete book card. New cards are punched for these.

It should be noted that library material may be discharged without regard to due date. Fines are automatically calculated each night. The time of discharge is recorded on the S/7 disc for all discharged items. A program which computes fines is run on the IBM 370 after the library closes. This program updates the overdue and fine lists accordingly. If a faculty or staff member had the item, fines are not computed. Only students and non-college patrons owe fines. To delete a name from the fines list, it is necessary to follow the procedure described below.

4. The Override Transaction

If the operator sees a "Restrict Patron" light when charging an item, the patron may not borrow material without a supervisor's permission. Patrons are restricted because of overdues or fines. If the supervisor approves a loan to a restricted patron, a supervisor key is used to override the system. When this has been done, the supervisor needs only to enter the IBM cards from the books borrowed because the S/7 has retained the patron's Social Security number in memory. It is important to take out the key when the transaction is completed to prevent another patron's books being charged to the same number.

5. The Reserve Transaction

A reserve, or hold, may be placed on any item which is listed in the daily circulation list or charged out on the same day. Attempting to reserve a book which has not been charged will result in the message "Book Not In Circulation, Cannot Reserve".

The operator needs to hit the RESERVE button and enter the first five digits of the book's accession number and press the ENTER button when the guidance light responds "Enter Accession Numbers 1-5". Next, the message from the terminal reads "Enter Accession Numbers 6-7". The operator enters these two digits and hits the ENTER button, thus completing the reserve transaction. For consequent holds, the operator only needs to enter the accession numbers of the next hold. If the proper number of numerics are not punched, the error message reads "Accession Number Not Entered or Invalid".

6. Manual Discharge

This transaction is used when the item to be discharged is not in hand or when the IBM card cannot be used in the discharge process. Such

instances occur when a patron mutilates a card or when the terminal is down for a long period of time. In this case, the operators need to write the accession numbers of all returned items on a tablet before placing the book on the shelves for shelving. The date due card is taken out of the book. When the terminals are operational, the accession numbers are manually entered. The operator depresses the MANUAL DISCHARGE button, enters accession numbers 1-5, depresses the ENTER button, enters numbers 6-7, and hits the ENTER button again. The operator continues to enter accession numbers for consequent books. There is no need, that is, to keep depressing the MANUAL DISCHARGE button.

F. Special Procedures

There are several special procedures, not separate transactions in themselves, which deserve mention for the reader's consideration. Special procedures are needed to charge-out books to specific library locations and to "special" patrons, to delete fines on returned overdue material, to renew library material, and to deal with restricted patrons.

1. Renewal Procedures

A book is renewed by first discharging it. This step is necessary in order to determine if a hold has been placed against the book. At a great expense of computer memory and additional programming, one could design the system to indicate holds during charging procedures. In the author's opinion, this additional expense is not warranted. A separate renewal transaction can also be added at some expense, but the designer of the system needs to consider if the number of renewals warrant such a transaction.

Finally, I would add that when the computer is off-line, the circulation librarian has several options. We allow renewals in periods of computer failure and make no attempt to determine if the book has a hold. We can get away with this policy because of the few reserves we have. For libraries with many holds on books, alternatives ranging from no renewals permitted to complete manual checking of renewals against a hold list must be considered for periods of computer failure.

2. Special Charges

Most charges are to Social Security numbers of students, faculty, staff, and non-college patrons. Special Social Security numbers were designated for library material charged to faculty reserve, interlibrary loan, lost and paid, exhibit, bindery, snag shelf, desk copy, special loan, and delinquent file. Most

of these categories should be self-explanatory. A special loan covers patrons who may use the library only once for special reasons such as research, a summer workshop, and the like. In such cases, the IBM card is charged to 11111-1111 and the patron's name and address written in pencil on the card. The card is filed in the off-line file after it is charged-out through the terminal. These special location designations are indicated in the right hand margins of the daily circulation list. (See Appendix D).

When a Social Security number cannot be identified by the computer, the patron who has the book is determined manually if possible and a record made and filed. The book is charged to 999999999; this stops notices from being printed. These unidentifiable numbers would also unnecessarily result in overdue and fine print-outs if the records were not transferred to the delinquent file. Generally, notices are not printed for any item charged to a special location.

The snag shelf number is for books and audio-visual material with missing parts or pages or non-identifiable numbers. They may sit on the snag shelf until a decision is reached about the item after sufficient time is allowed for the item or missing part to show.

Books which faculty members place on reserve for their students to read are all charged to a special number. Manually maintained files will indicate which items are on reserve and by whom. The use of this library service is so low that only one special number is used, rather than particular numbers for each department.

3. Changing #SS, Accession numbers, Due dates, Reserve counters, etc.

A special program which requires an IBM card to be keypunched was written in order to change dates and numbers. When a patron wishes to have

the loan period extended, for example, a note is made for the library keypuncher to keypunch an IBM card. Such requests are not frequent enough at this time to purchase the additional computer memory which would be needed for on-line changes. Another reason for not going to an on-line method is the need to control and secure such changes from unauthorized uses by desk attendants. With over thirty student assistants who make virtually all charges and discharges, on-line methods may not be feasible. Suffice it to say that when any reason demands a change in a Social Security number, author, title, accession number, or due date, the keypuncher makes an IBM card in a designated format and sends the cards to the Computer Center. The S/7 is updated with these changes before notices or reports are produced.

4. The Off-line Procedure

Every automated system should have a method to follow for those occasions when the system fails. At the Slippery Rock Library, the attendant merely takes the IBM card out of the book, indicates in pencil the patron's Social Security number, and saves these cards until the S/7 is functioning again. A special date due card is placed in the book to indicate the book was charged in this fashion. Since the IBM cards are later refiled in a special off-line card file by accession number, the attendant merely must find the card in this file when he sees a special due card. The Social Security number is erased by the desk attendants when the item is returned and discharged. Failing to erase the number will result in more than one number appearing on an IBM card and, consequently, may lead to punching the wrong number after the S/7 is operational. Another problem exists when the attendant fails to discharge the book through the badge/card reader after finding the IBM card in the Off-line file.

Very little down-time has been experienced over the past several

years. Even in the first several months of operation, the failures were kept to a minimum. During the initial two years of operation, the S/7 was down more frequently because it failed whenever the IBM 370 failed. Since June, 1976, however, the S/7 runs autonomously during the day since it uses its own disc. There has been little down-time since then.

5. Fine Payment Procedure

When a library borrower pays a fine on library material, the desk attendant must look up the patron's name on either the overdue or the fines list (see Appendix F). When the payment is on books which the patron currently possesses and is returning, the attendant will find the borrower's name in the overdue list. When the borrower has already returned the material on a previous occasion, the attendant will find the name on the fine list. In both cases, the attendant then indicates "paid" beside the borrower's name in the left-hand margin of the list. The attendant must also indicate the amount paid, his initials, and the specific items on which the payment is being made. Patrons may pay for some but not all of the items in this manner. The procedure is not designed, however, for partial payment on specific items. We do not deal with partial payments except on rare occasions when the patron insists on partial payment, or when we feel it is to our advantage to do so and waive the remainder of the payment.

The keypuncher takes the overdue and fine lists each weekday morning and keypunches a fine paid card for the entries marked. Three things go on this keypunched card: the accession number of the item, the patron's Social Security number, and the amount paid. Currently, the amount paid is recorded as $9.99 for every item, regardless of the actual amount paid. The maximum fine on any one item is $5.00. Less than one hour each day, on the

average, is spent in keypunching these cards. The reason why $9.99 is put on the card is to safeguard against situations where the incorrect amount is keypunched, thus failing to erase all of the fine. If, for example, 49¢ were keypunched instead of 99¢, the patron would still be listed for a 50¢ fine on an item. There has been no problem with this procedure since virtually all patrons pay the correct amount and no partial payments are accepted on a single item.

This fine payment procedure may seem to be a cumbersome procedure, particularly since many systems have a transaction which allows for a discharge and fine payment at the same time. The reason why a "Discharge-Fine Paid" transaction was never inaugurated was because of the feeling that student desk attendants would abuse the procedure for their friends. That is, a friend of the attendant could easily get away with not paying fines if the attendant used the Discharge-Fine Paid transaction. By using the method described above, it is relatively easy for the supervisor (librarian or clerk) to check on such abuses. Checking is time-consuming because the detail tape of the cash register must be checked against the computer lists of overdue and fines where payments are indicated. This is rarely done since only several abuses of the procedure have been detected.

A fines paid listing (Appendix F) is made each day and lists the accession number, call number, patron number, patron name, and amount paid of each item for which a fine paid was made. Books not returned are indicated in the right-hand margin; this note indicates that a fine paid card was made but the book was not discharged. This list is made for control purposes only.

The fine paid IBM cards are taken to the Computer Center on a daily basis, Monday through Friday. It is also possible that a mistake in the accession number or patron number could be made although this is not the case at

the present since the cards are verified and the keypuncher is extremely accurate.

6. Restricted Patrons

Patrons who owe library material or fines may be restricted from charging library material. The Circulation Department merely sends a list with the patrons' names and Social Security numbers to the Computer Center when it wishes to restrict patrons. A maximum of fifty names is allowed at present due to memory limitations of the S/7. This limitation necessitates creating criteria as to who will be restricted. If a restricted patron attempts to charge out an item, a "Restricted Patron" message will appear. The attendant knows, then, to consult the overdue and fine lists and other records.

7. Notices

Notices produced by the system include only overdue and fine notices at this time. These are represented in(Appendix H). Because of the few reserves handled weekly, no plans exist to provide notices to indicate that holds have been found.

Overdue and fine notices are currently sent monthly only because of the volume sent and amount of postage. Over 700 notices need to be mailed on average each month with several hundred campus notices sent in addition. The vast majority of Slippery Rock students live in off-campus dormitories, private apartments or houses. Notices are printed on perforated sheets of computer paper and manually separated and stuffed in windowed envelopes. This procedure is used for several reasons: (1) privacy of letters vs. postcards, (2) costs of designing and implementing a postcard system, and (3) problem of continuations. The majority of students have five items at any one time; thus, more than one postcard would be involved. This would necessitate increased

postage costs and a special program or manual procedure for scanning postcards. Nevertheless, a postcard system is being kept in mind because of the time now involved to cut, separate, and stuff the notices.

Both fine and overdue notices are printed on continuous, perforated paper at the same time so that an overdue notice to a patron is printed next to a fine notice to the same patron. Notices are arranged in zipcode order, but are not in alphabetical order. Student assistants have been found to be very careless not only in seeing that notices to the same name or address are stuffed in one envelope, but also in placing the address label portion of the notice in the window. Nevertheless, these present procedures are a marked improvement over the time when notices, envelopes, and fine records had to be manually produced over a period of several days. It now takes three or four students an entire morning to cut, separate, and stuff the, on average, seven hundred individual notices printed.

During the first two years of S/7 operations, notices were sent to students and others when a book was seven, thirty and ninety days overdue. Notices were produced daily using this system. This procedure proved to be too cumbersome and demanding on the supervisor's time as well as the student assistants'.

To produce notices at present, the supervisor merely needs to call the Computer Center when notices are wanted. Not all notices need to be sent each month. Occasionally, notices are mailed only to campus addresses and more recently incurred obligations in order to save postage. To limit notices by overdue or fine date has been contemplated but not implemented. If, for example, only notices since a particular month are wanted for mailing, the notices are now manually separated. Since this procedure is seldom followed,

program changes to have this automatically prepared are not deemed cost effective at the present time. To limit production by date, furthermore, would mean that patrons with recent and prior obligations would receive only the notice about the recent overdue or fine obligations.

G. Costs

Total costs of operating and maintaining the S/7 are all but impossible to measure accurately and completely. It is impractical, for example, to put a monetary figure on the various reports generated by the automated system that were impossible to generate with the Gaylord system. The routine production of notices, the ability to restrict patrons, the reduction in errors, etc., are other immeasurable advantages. The S/7 and the 2791 terminals were purchased in 1976 and selling this hardware may not be possible.

Currently, $2,652 ($221 per month) is spent yearly on the maintenance of purchased equipment. $12,424 ($1,035.30 per month) is spent on the maintenance and rental of the disc and other modules which were not purchased. Thus, a total of a little over $15,000 a year is spent on rental and maintenance. $16,808 was spent in 1976 on the purchase of the S/7 and 2791 terminals.

Other costs attributable to the S/7 circulation system include keypunching, purchasing of IBM cards, rental of the keypunch station, operating costs, and salaries of the keypunch operators. Initial programming and operating costs to the Computer Center may be added as well. The latter may amount to an equivalent of an additional staff member although these costs have never been figured. Whereas the Circulation Department lost two clerical positions due to automation, the net effect may be the savings of one person's salary. Since the S/7's programming is completed and operating costs are minimal, probably one to two hours a day of a Computer Center operator's time, on average, is now spent on this library operation. The other mentioned costs such as on-going keypunching and punching of IBM cards is roughly the same as that involved with the Gaylord system.

H. System Problems

1. Operation Failures

The most serious problems to date have occurred when the S/7 intermittently fails to charge, discharge, or indicate errors without our knowledge. These failures, that is, are unknown because the guidance lights indicate that the transaction has been successfully completed. Examples include keying-in the incorrect amount of digits on a manual charge or reserve, as well as a failure of the system to accept a discharge or charge. The extent of these problems cannot, of course, be fully determined. Test checks of the system usually fail to show the failures because the failures are intermittent and the test checks are made intermittently. Unless every charge and discharge is faithfully recorded manually by desk assistants and verified against the next print-out, the extent of the problem cannot be accurately measured. This has been done during particularly slow times but with no success in terms of indicating errors. No pattern to the failures has been detected.

Judging from the number of complaints after notices are mailed out, a thousand items may be involved in these failures annually. After receiving a notice, patrons will complain that the book has been returned but find it on the shelf. Usually, such books are found on the shelves with the date due cards removed. It is possible, of course, that some patrons place the books on the shelves in order to escape fines. But the failures unquestionably exist because library workers, faculty, and staff are involved (and faculty and staff do not pay fines.)

One cause of the problem may be creased or damaged IBM cards. Another may be bent brushes in the card feed terminal. Scotch tape that stuck to a feed roller once caused the problem. To repeat, there did not appear to

be any problem because the cards were read by the terminal and transmitted to the S/7. A solution to the problem is internal diagnostics but additional disc for the S/7 cannot be purchased at this time. That is, 4K of memory could be purchased for such capability, but the cost of doing so would be unwarranted because new hardware is available at a cheaper rate. It would be far more cost effective to sell the hardware we own and purchase a new system.

What has been disturbing, however, is the need to thoroughly prove and document a problem before action is taken in terms of getting an IBM service man or simple investigation. "Proof" is not always obtainable since the original IBM card cannot be located, the charge or discharge occurred long ago, the print-out may have been destroyed by the time an error is detected, etc.

Shutdowns of the entire system have been infrequent. Electrical storms that damage equipment, power failures, repair work, and addition of new hardware have been the most frequent reasons. When shut-downs do occur, however, the S/7 may not be operational for a period ranging from thirty minutes to several hours. Hardware changes are planned for vacation periods and the S/7 may not be operational for several days. These occurrences are both understandable and unavoidable.

Except when the system was installed, operational failures have also been infrequent. Usually they have resulted because the Computer Center operator failed to load the program properly at the start of the day. When the guidance lights go out, any desk attendant may simply call the Computer Center. The program is reloaded and, in about two minutes, the system is operational once again. Now that the system has been used for over five years, the number of failures seem to be increasing. The most recent instances have involved the 2791 terminals. Because the S/7 is no longer manufactured, IBM has also dis-

continued training of their service personnel for the S/7. Already, therefore, we see the need to buy or lease new badge/card readers.

2. Badge Mutilation, Deterioration, and Failure

A significant problem which is largely outside of the library's jurisdiction involves the production of badges, or identification cards. These are hollerith punched with the person's Social Security number and laminated by the Food Services Office which is under the administration of Student Affairs. The problems consist of the following:

a. Mispunched or non-punched badges due to equipment failures.

b. Deterioration and mutilation of badges due to patron's using them in key rings.

c. Validation of payments for food services and other payments is done by stickers. These pressure sensitive stickers occasionally come off in the badge readers. Usually a repair man is needed to clean out the badge-feed.

d. Inability or inconvenience to students to obtain ID badges during the hours that the dining hall is open, (8:00 A.M. to 6:00 P.M.). Mostly full-time graduate students and post-baccalaureate students have this difficulty since they work full-time and have families.

As a result, nearly one out of every two badges fail to work in the badge readers. Desk attendants, therefore, need to charge most books manually which, of course, increases the amount of errors. Consequently, many books are charged to another number and the Computer Center and circulation staff cannot identify many patrons. "Non-identifiable patrons", or "patrons not on files" may also occur if the hollerith punches are incorrectly made or off-register. Badges that work one year may not work another. So, there is little sense to requiring patrons to have badges remade. To do so would not be good public relations. Furthermore, if the requirements become too rigid, the theft rate may increase because students do not usually go to the trouble to have a new card made.

To minimize error in manually charging material, desk attendants are to verify the keyed-in numbers against the displayed numbers on the terminal. If more than a digit or two cannot be read on the badge, student assistants are to verify the numbers against the appropriate directory, rather than to take the patron's word for his Social Security number. When patrons do not have their badges, the same verification should occur.

3. Card Deterioration, Misreading, and Failures

When the brushes in the terminal's card feed are bent or gummed-up with tape, another result may be misread IBM cards. A creased card or damaged IBM card may also cause the problem. Some letters and numbers are multipunched; if one of the three punches is not read, another character (with two punches) is read and printed. The keypuncher is able to determine what error was made but the damage may have already been done. If the accession number field was affected, the book will be charged incorrectly. Unless the book is discharged in the same incorrect manner, the patron will still be listed for the book. Until the difference between the print-out entry and the charge card accession numbers is discovered, the book will not be erased from the print-out no matter how many times the book is relocated on the shelves and discharged. Desk assistants are to verify the accession numbers in all cases when a complaint is registered and the book located. To delete the item from the patron's overdue list, it is necessary to manually discharge the item by entering the seven digits as they appear on the list. If one of the digits is an alphabetic character, a special procedure by the Computer Center must be followed in order to delete the item.

4. Circulation of Audio-Visual Material

The decision to circulate audio-visual material by the S/7 was not arrived at without considerable debate. Opponents felt that (1) there would be too many IBM card files created for the material such as slides and filmstrips (these materials do not have pockets, of course). (2) It would be too difficult to trace back to determine who last had borrowed an item with missing or damaged contents. (3) A made-up accession number would have to be devised. In the distant future, this number may be needed for regular acquisitions although, at the current rate of acquisitions, we would not hit the seven millionth accession number for two hundred years. (4) Large sets of slides and other items would have to have IBM cards made for each individual item if the policy of allowing parts of sets to circulate were to continue. Examples of the latter are parts of large slide sets treating subjects historically or by country.

The decision to circulate audio-visual material by the S/7 was based primarily on the need for consistency in circulation procedures. Secondly, it was felt that we should get "the most for our money". This has meant cutting the cost per circulated item.

In retrospect, the decision to automate the audio-visual collection was not as troublesome as previously thought. Desk attendants must now be more careful in examining the material when it is returned and notifying patrons immediately. This is a good policy anyway. Computer print-outs are saved for a period of time so that checking back is sometimes possible. Many audio-visual items are only previewed in the library and not borrowed for home or office use. Such materials are discharged on the same day as charged and do not get listed in the print-out. Statistics are gathered, however, on such pre-viewed items. It is only slightly more time-consuming, secondly, to search for the IBM cards

(as opposed to Gaylord cards) for slides and filmstrips. IBM cards are naturally more difficult to read but underlining the accession number, by which they are filed, helps to locate these cards. Third, the made-up accession numbers (this field is seven digits long) are numbered from seven million on. Since we have less than 500,000 items accessioned at the present time in the entire collection, this will not pose any problem for a considerable time. (About 30,000 new acquisitions are made per year.) Finally, since parts of sets circulate, there seems to be no easy solution to the problem of having to locate and charge-out each piece in a set which does circulate. If slides in a slide set charged to two or more persons, for example, become lost, it is easy to determine exactly which slides the particular patrons have.

Another acute problem for the Instructional Material Center has been the loss of an item's past circulation record. With the Gaylord system, it was possible to trace back to the previous borrower in most cases because his number, or name and address was on the charge card. With the computer system, the only way to check back is to look at old computer print-outs. But due to limited storage capability, all print-outs are not saved and prior patron information is sometimes lost. Because of this, desk attendants are to examine all audio-visual materials when they are returned and before they are shelved. Notices and bills should be sent before the item is again allowed to circulate, if possible.

5. Simultaneous Operation of Two Circulation Systems

Although some frustration resulted from the need to operate two systems simultaneously for a short period, there were not as many problems as anticipated. One, it was less difficult and time-consuming to charge, discharge, and search for books with the new system. Secondly, a different date due card

was used for tne books circulated by the new system. Thirdly, books which had IBM cards punched were stamped with a "Do not remove or mutilate IBM card" note on the pocket during the reprocessing stage. Student assistants did occasionally, however, place wrong date due cards in pockets but this problem was easily detected and handled. Fourthly, student assistants could easily be trained for the new system. Because of the guidance lights and error messages, student assistants could be used to train other students. Thus, patrons did not experience problems or frustration in dealing with the new system and desk attendants grasped the operation of the system readily.

Other problems and delays were experienced due to the lack of experience with library automation on the part of IBM representatives, librarians, and Computer Center programmers. Consultants with the expertise and experience with library automation were definitely needed. Areas for consultation should have included IBM card design, keypunch operations and work flow, stages of changeover or development, automation of audio-visual material, statistical reports and lists, badge design, all programming, and selection of the best vendor and system. The last two variables were most important.

I. Consideration for Future Changes and Improvement

After nearly five years of continuous expansion, the S/7 memory has been fully utilized. New programs cannot be added to the S/7; but they can be added to the IBM 370. The need for improvements, involving additional programmimg and memory, necessitates a look at newer computer systems. The S/7 in fact, has been phased-out by IBM after little more than ten years of operation in business, industry, and libraries. Larger systems, in terms of capability and memory, are now available at even less cost. The present system used at SRSC will be adequate for a number of years but not without some strain. The number of holds permitted on library material in circulation, for example, is limited to 100. Searching for more than 100 holds must now be done manually. Only fifty persons may be restricted. Most seriously, internal diagnostics cannot be added in order to prevent the kinds of problems discussed earlier.

Primary consideration in looking at new systems will be given to systems that not only allow the present IBM cards to be used but which can accommodate future needs. Some of these considerations in looking at new systems are the following:

1. A fully automated, on-line multi-purpose system that combines automation of circulation, cataloging, acquisitions, serials, and bibliographic retrieval is seen in the not too distant future of this library. OCLC (the Ohio College Library Center) which is used at SRSC for cataloging may soon develop such a system. The use of mini-computers along with larger computing systems may also permit a complete systems approach.

2. A terminal for circulation that allows the reading of hollerith punches by light or air instead of brushes is needed in order to reduce the many

problems caused by creased or damaged cards. The use of barcoding for badges and book call numbers may also be considered but the need to reprocess the the library material would weigh heavily against this move.

3. A system which permits a far greater number of reserves and restricted patrons must be found. A program which alerts the terminal operator when any patron on the overdue or fine list is charging books should be able to be added when a new system is developed.

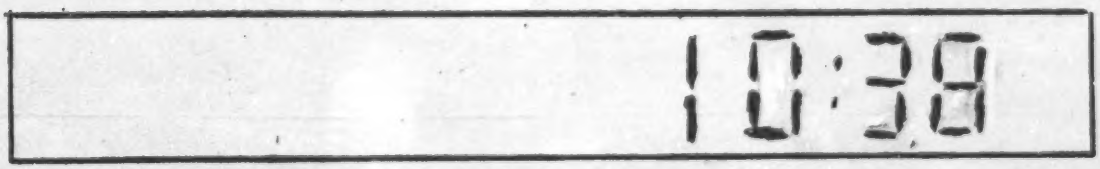
4. The ability to update records on the system through a TTY terminal in the Circulation Department should exist. Such a capability should also permit immediate status reports on anv item currently in circulation. At present, it is not known what books were charged during the day's operation until a new cumulative print-out is obtained on the next day. Searches by call number may also be a consideration in order to know what books on a particular subject are in circulation.

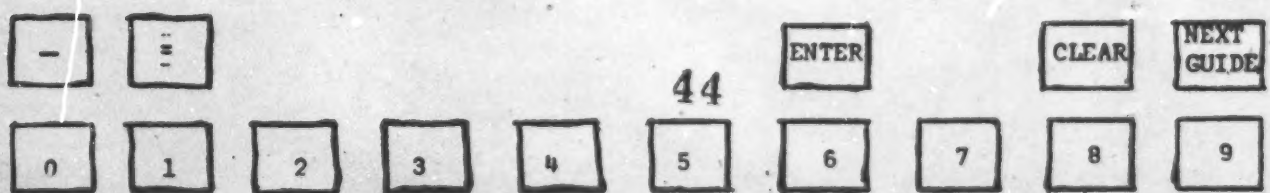
5. Similar capabilities would allow changes in due date, patron number, fine amounts, and so forth. A program which allows the circulation records to be searched by patron number would also be highly desirable in order to determine the status of patrons with the library. At present the overdue list only keeps desk assistants aware of patrons with overdue library material--although they may have additional material not yet due.

6. Automatic preparation of book recall and "pick-up" notices would be desirable in terms of saving staff time in preparing notices.

7. A system which prints these notices on a TTY terminal in the department at the time of need would be more desirable than one which prints notices after library hours.

ACCESSION NO. NOT NUMERIC TRANSACTION NOT PROCESSED	INVALID TRANSACTION	SYSTEM ERROR -RETRY- CALL COMPUTER CENTER	WAIT FOR "RESUME PROCESSING"
	INVALID OVERRIDE ATTEMPT	ACCESSION NO. NOT ENTERED OR INVALID	PATRON NOT ENTERED OR INVALID
CAN'T RESERVE NOT ON CIRCULATION FILE	RESTRICT PATRON	ENTER CARD	BADGE NOT READABLE
ENTER BADGE	BOOK RESERVED	RESERVE TABLE FULL	
ENTER CARD	KEYPUNCH NEW CARD		
ENTER PATRON NOS. 1-5	ENTER PATRON NOS. 6-9		KEY REQUIRED
ENTER CARD	ENTER ACCESSION NOS. 1-5	ENTER ACCESSION NOS. 6-7	SELECT TRANS.
ON LINE	CLEAR/ REPEAT	IN PROCESS	CARD IN READER





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APPENDIX B

LIST OF S/7 TERMINAL GUIDANCE LIGHTS

Operating Messages

Select Transaction
On-line
Clear/Repeat
In-process
Card in Reader
Book Reserved
Restrict Patron
Enter Card
Enter Badge
Enter Patron Nos. 1-5
Enter Patron Nos. 6-9
Enter Accession Nos. 1-5
Enter Accession Nos. 6-7

Error Messages

Accession No. Not Numeric
Transaction Not Processed
Invalid Transaction
Invalid Override Attempt
Patron Not Entered or Invalid
Badge Not Readable
Cannot Reserve; Not On
Circulation File
Keypunch New Card
Key Required
System Error; Retry
Reserve Table Full

APPENDIX C

S/7 REPORTS

Daily Reports

1. Daily Circulation (by call number; cumulative).
2. Fines List (fines owed by patron name).
3. Overdue List (overdue books and audio-visuals by patron name).
4. Statistics by call number.
5. List of Transactions (charges, discharges, reserves).

Monthly and/or Annual Reports

1. Circulation frequencies of all library material ever circulated by call number; includes only the call number and number of times circulated by year.
2. Cumulative statistics (by broad classification letter (A, B, C, etc.).
3. Cumulative statistics (by patron type--undergraduates, graduates, faculty, staff, non-college, other).
4. Number of overdues.
5. Number of fines.
6. Number of items circulated by 15 minute periods.
7. Circulation by faculty departments (totals).
8. Circulation by majors of students (totals).

APPENDIX D

DAILY CIRCULATION

CALL NUMBER	ACCESSION NUMBER	AUTHOR	TITLE	PATRON STATUS	NUMBER	DUE DATE	SPECIAL NOTE
98-PAPERBACK	9800160	GILBERT	ACASEFORMR.CROOK	3	196-50-4774	01/25/79	REQUESTED---1
CM375GR.1-2	0379690	CALIF.	THEDENTIST	5	444-44-4444	4/17/79	ON EXHIBIT
J291.1K44D	0395984	KEYSER	THEDAYSOFTHEWEEK	5	222-22-2222	05/22/79	INTER-LIB
B380A5H4	0067265	PLATO	PHAEDRUS	5	000-00-0000	02/15/79	FAC RESERVE
B720 S5	0216909	SHAPIRO	MEDIEVALPHILOSOPHY	4	168-42-7896	05/21/79	
B1300E6	0049644		THEEMPIRICISTS	5	666-66-6666	05/21/79	AT BINDERY
AS911A2	0409185		THE FOUNDATIONGRANTSINDEX	2	168-38-9876	05/29/79	
BL1410 H3	0121765	CH'EN	BUDDHISM	5	999-99-9999	03/30/79	DELINQUENT
BX4905L4	0155540	LEBAS	C.S.LEWIS	5	555-55-5555	05/20/75	LOST & PAID
D743M4913	0371717	MICHEL,HENR	THESECONDWORLDWAR	5	888-88-8888	05/19/76	SNAG

APPENDIX E

FINES PAID

ACCESSION NUMBER	LC-NUMBER	PATRON NUMBER	PATRON NAME	AMOUNT PAID	BALANCE
0000199	TEXT61S58	123-46-5789	JONES, JOHN J.	WAIVED	
0020564	BF724C55	456-78-9012	DOE, DON D.		NOT RETURNED
0029659	HD7125M35	789-01-2345	ROE, ROBERT R.	9.99	NO RECORD FOUND

LIST OF DISCHARGED BOOKS WITH RESERVES

ACCESSION NUMBER	LC-NUMBER	AUTHOR	TITLE	DATE OF DISCHARGE
0400957	HV1663D44		DEINSTITUTIONALIZATION	4/30/79
0227021	GV445A406	ALONSO	PHYSED&RECVISUALLYHNDCAPED	4/20/79
0054417	BF199M3C.2	MASLOW	MOTIVATIONANDPERSONALITY	40/30/79

OVERDUE LIST

PATRON - NAME, NUMBER, TYPE

ACCESSION NUMBER	CALL NUMBER	AUTHOR	TITLE	DUE DATE
JONES, JOHN J.	123-45-6789 3			
0081246	PZ3S8195CANC.2	STEINBECK	CANNERY ROW	04/05/77
0270452	PZ4S69F0	SOLZHANITSYN	FORTHEGOODOFTHECAUSE	01/08/79
SMITH, SAM S.	678-90-1234 4			
0258256	T12T61971V.3		THOMASREGISTEROFAMER.MANUF.	03/30/78
0258271	T12T61971V.7		THOMASREGISTEROFAMER.MANUF.	03/30/78

FINES LIST

PATRON - NAME, NUMBER, TYPE

ACCESSION NUMBER	CALL NUMBER	AUTHOR	TITLE	DUE DATE	RETURN DATE	AMT. DUE
BROWN, BOB B.	456-78-9015 3					
0030445	BR325B26	BAINTON	HEREISTAND	04/03/79	04/09/79	.30
0177529	JFD327HC.4	DEJONG	HURRYHOME,CANDY	04/04/79	04/28/79	2.40
CORNY, CARLA C.	345-67-8902 1					
0387802	HC107N53	ROSSI	REFORMINGPUBLICWELFARE	03/16/79	04/26/79	2.05
0339472	YFJ54D	JENSEN	DAYSOFCOURAGE	04/05/79	04/28/79	1.15

APPENDIX G

DAILY CIRCULATION STATISTICS

J.....57	T..... 3	Y.....22	B.....46	D.....10	E..... 8	F..... 4
G.....19	H.....31	J..... 1	L.....18	M..... 1	N.....11	P.....15
Q.....19	R.....20	S..... 7	T.....14	U..... 1	71.....6	72..... 8
73..... 6	74..... 1	76..... 1	77..... 7	80..... 3	82..... 8	83..... 9
98..... 2						

FACULTY	5
STAFF	0
GRADUATE	19
UNDERGRADUATE	324
NON-COLLEGE	7
OTHER	3

J - Juvenile
T - Text
Y - Young Adult
71 - Film
72 - Filmstrip
73 - Game
74 - Pic. Kit
76 - Kit AVA
77 - Kit SFS
80 - Overhead Trans.
82 - Picture
83 - Phonodisc
84 - Slide
86 - Tape
98 - Paperbacks

APPENDIX H

A. Faculty Overdue Notice

D I D Y O U F O R G E T? P L E A S E R E T U R N T H E F O L L O W I N G O V E R D U E B O O K(S):

CARD NUMBER - 616-16-1616

CALL NUMBER	TITLE	DUE DATE
QE696F54	GLACIAL&PLEISTOCENEGEOLOGY300	05/19/80
F1219.3A7V6(FOL).	PRE-COLUMBIANARTOFMEXICO	05/19/80
GN739C48	MANINPREHISTORY	05/19/80
QE696I55V.7	QUATERNARYPALEONECOL	05/19/80
GN855E27C47	NORTHEASTASIAINPREHISTORY	05/19/80

DOE, JANE

SLIPPERY ROCK STATE COLLEGE
LIBRARY CIRCULATION DEPT.
PHONE.....794-7243

P L E A S E O B S E R V E T H E 1 S E M E S T E R L O A N P E R I O D F O R B O O K S, 3

P E R I O D F O R A-V M A T E R I A L.

B. Student Overdue Notice

D I D Y O U F O R G E T? P L E A S E R E T U R N T H E F O L L O W I N G O V E R D U E B O O K(S):

CARD NUMBER - 330-30-3300

CALL NUMBER	TITLE	DUE DATE
QL76155V.151975	THEINTERNATIONALZOOYEARBOOK	02/26/80
QH541.5P63M28	PONDSANDLAKES	01/25/80

SMITH, JAMES

SLIPPERY ROCK STATE COLLEGE
LIBRARY CIRCULATION DEPT.
PHONE.....794-7243

F A I L U R E T O D I S C H A R G E A N Y O B L I G A T I O N, M A Y R E S U L T I N G R A D E S

O R T R A N S C R I P T S B E I N G W I T H H E L D

APPENDIX H (cont'd.)

C. Fine(s) Notice

F I N E(S) N O T I C E

C A R D N U M B E R...213-30-3210

CALL NUMBER	TITLE	DUE	RETURNED	FINE AMT
DS493.4K51975	ANACCOUNTOFTHEKINGDOMOF	11/19/79	12/15/79	1.30
RC483.5L9C3	LSDPSYCHOTHERAPY	05/10/79	08/01/79	4.15
QH541.5F7M31974	FRESHWATERECOLOGY	11/19/79	12/15/79	1.30
DS485N4R67	NEPALSTRATEGYFORSURVIVAL	11/19/79	12/15/79	1.30
DS485N4H317	HISTORYOFNEPAL	05/10/79	08/01/79	4.15
HC437N4M5	FOREIGNAID&POLICIESINNEPAL	05/10/79	08/01/79	4.15
			TOTAL DUE	16.35

JONES, JAMES J.
100 MAIN STREET
SLIPPERY ROCK PA 16057

SLIPPERY ROCK STATE COLLEGE
LIBRARY CIRCULATION DEPT.
PHONE.....794-7243

F A I L U R E T O D I S C H A R G E A N Y O B L I G A T I O N, M A Y R E S U L T I N G R A D E S

O R T R A N S C R I P T S B E I N G W I T H H E L D

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